What is claimed is:

1. A heart-rate variability analysis apparatus comprising:

an electrocardiogram information detecting unit configured to detect electrocardiogram information about an object to be diagnosed;

a heart-rate signal calculating unit configured to calculate a heart rate signal indicative of a heart rate of the object from the electrocardiogram information;

a breathing signal calculating unit configured to calculate, from the heart rate signal, a breathing signal in which a breathing state of the object is reflected; and

a heart-rate-variability information providing unit configured to provide variability information of the heart rate of the object in which the breathing state of the object is reflected, on the basis of both of the heart rate signal and the breathing signal.

2. The heart-rate variability analysis apparatus according to claim 1, wherein the heart-rate signal calculating unit is configured to calculate data indicative of a peak to peak interval in an electrocardiogram wave indicative of the electrocardiogram information.

3. The heart-rate variability analysis apparatus according to claim 2, wherein the data of the peak to peak interval is data indicative of an interval between two adjacent R-waves appearing in the electrocardiogram wave.

4. The heart-rate variability analysis apparatus according to claim 2, wherein the heart-rate-variability information providing unit is provided with

a breathing number calculating unit configured to calculate a breathing rate of the object from an autocorrelation value of the data indicative of the peak to peak interval in the electrocardiogram wave,

a modulator configured to apply quadrature modulation to the data indicative of the peak to peak interval, the quadrature modulation using a modulation signal of which frequency being adjusted depending on the breathing rate,

a demodulator configured to demodulate the modulation signal

modulated by the modulator, and

a heart-rate-variability information outputting unit configured to output, as the heart-rate variability information, a demodulated result from the demodulator.

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5.    The heart-rate variability analysis apparatus according to claim 1, wherein the breathing signal calculating unit is formed into an autocorrelator configured to calculate an autocorrelation value of data indicative of a peak to peak interval in an electrocardiogram wave

10    indicative of the electrocardiogram information.

6.    The heart-rate variability analysis apparatus according to claim 5, further comprising a reliability information outputting unit configured to output the autocorrelation value as information indicative

15    of a reliability of the breathing state of the object.

7.    A heart-rate variability analysis method comprising the steps of:

detecting electrocardiogram information about an object to be

20    diagnosed;

calculating a heart rate signal indicative of a heart rate of the object from the electrocardiogram information;

calculating, from the heart rate signal, a breathing signal in which a breathing state of the object is reflected; and

25    providing variability information of the heart rate of the object in which the breathing state of the object is reflected, on the basis of both of the heart rate signal and the breathing signal.

8.    The heart-rate variability analysis method according to claim

30    7, wherein the heart-rate signal calculating step is configured to calculate data indicative of a peak to peak interval in an electrocardiogram wave indicative of the electrocardiogram information.

9.    The heart-rate variability analysis method according to claim

35    8, wherein the data of the peak to peak interval is data indicative of an interval    between    two    adjacent    R-waves    appearing    in    the

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electrocardiogram wave.

10. The heart-rate variability analysis method according to claim 8, wherein the heart-rate-variability information providing step is provided with the sub-steps of:

calculating a breathing rate of the object from an autocorrelation value of the data indicative of the peak to peak interval in the electrocardiogram wave,

modulating the data indicative of the peak to peak interval by applying quadrature modulation, the quadrature modulation using a modulation signal of which frequency being adjusted depending on the breathing rate,

demodulating the modulated signal, and

outputting, as the heart-rate variability information, a demodulated result in the demodulating subs-step.

11. The heart-rate variability analysis method according to claim 7, wherein the breathing signal calculating step is an autocorrelating step of calculating an autocorrelation value of data indicative of a peak to peak interval in an electrocardiogram wave indicative of the electrocardiogram information.

12. The heart-rate variability analysis method according to claim 11, further comprising the step of outputting the autocorrelation value as information indicative of a reliability of the breathing state of the object.

13. A computer-readable program for analyzing heart-rate variability, the program being executed by a computer provided in a heart-rate variability analysis apparatus, the computer achieving the functions of:

electrocardiogram information detecting means for detecting electrocardiogram information about an object to be diagnosed;

heart-rate signal calculating means for calculating a heart rate signal indicative of a heart rate of the object from the electrocardiogram information;

breathing signal calculating means for calculating, from the heart

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rate signal, a breathing signal in which a breathing state of the object is reflected; and

heart-rate-variability information providing means for providing variability information of the heart rate of the object in which the breathing state of the object is reflected, on the basis of both of the heart rate signal and the breathing signal.